

U.S. Patent Application No. 10/076,069 Inventor: JURECIC et al. Title: "HEPP, A Novel Gene with a Role in Hematopoietic and Neural Development" Docket No. 39532-176599



1681 GCACCACATGCTCCATGTCAAGTGTGTACGTGGAGACCACTGGCTCCCAGGCCTGTGCTC 1740 1741 AGAGAGGGTGTGCAGTCCTACGTGTGCTGGGGGGGACCACGGTGACCTGTGCTTGCC 1800 1801 TTTTAAAATGGTGCTTGGACGTTTTAAGGTTAAAAACAATCCGACTCCATATGATTTAGG 1860 1861 GCTCCTCCACCCTGGGGTGGCCCCTATGCTGTCTTGTACTCCTAAAGTCTTGGTACTC 1920 1921 GGCACTGTCAGACTCCACCCATGTATCCTTTTTGTTTCTCTTTTTTTT	_		
121   GCAGGTGACCGATTCCGGGTGCCCGAAGGAGATGATGAGGGTCTTGCAGCCGCCCG   180     1			
181   CCTGGACAGGATGTTTGCTAGAGGGCTGAAGAGAGAATATAGTGACCAGGAAGAAGAGAGT   1		<del></del>	
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241 AGAGGGTTTTGCACTCCTTCCTATAGCCTGCAGCAGCAGTCATCCTGGACATGTC			
S			17
301   CCTTGTCAAGCTCCAGCTCTGTCACATGCTAGTGGAGCCCAATCTCTGCCGGTCCGT   1	241	AGAGGGTTTTGGCACTGTCCCTTCCTATAGCCTGCAGCGACAGTCACTCCTGGACATGTC	300
L V K L Q L C H M L V E P N L C R S V L   57			37
361   CATCGCCAACACAGTCCGGCAGATCCAGGAGGAAATGAGCCAGGATGGTGTGTGGCATGG	301	CCTTGTCAAGCTCCAGCTCTGTCACATGCTAGTGGAGCCCAATCTCTGCCGCTCGTCCT	360
1		LVKLQLCHMLVEPNLCRSVL	57
421 GATGGCACCCCAGAATGTTAGATCGGGCACCAGTTGAACGCCTGGTGTCCACAGAGATCCT  M A P Q N V D R A P V E R L V S T E I L  481 GTGTCGTACAGTGAGGGAGGCTGAGGAAGAGAGCCCCTGCTCTGAACTGGAAGAGATCCTC  C R T V R G A E E E H P A P E L E D A P  541 CTTGCAAAACTCGGTTTCCGAGCTCCCCATCGTTGGCTCAGCCAGGGCAAAGGAACCC  L Q N S V S E L P I V G S A P G Q R N P  601 TCAGAGCAGCCTCTGGGAGAAGAGCCCCACAGAAAAACAGGGGGAAGCTTCAGAAGTC  Q S S L W E M D S P Q E N R G S F Q R S  661 ACTGGACCAGATATTTGAGACCCTGGAGAACAAAAACATCCAGTTCAGTGGAGGAACTCTT  L D Q I F E T L E N K N S S S V E E L F  772 CTCAGAGTGGACAGCTCTCTGCATGGACCACCAGAGAAAACAGGGGAACTCTT  L D Q I F E T L E N K N S S S V E E L F  773 CTCAGAGTAGGACAGCTCTTCTGCATGGCCTTAGACCACACTGCTACAGGAGAACACACCCCTCTCCCAG  S D V D S S Y Y D L D T V L T G M M S G  197  781 GACCAAGTCCAGTCTCTGCAATGGCCTTGAGGGGCTTTGTGTGAGCACCCCCTCTCCCAG  S T C K S D L A E L D H V V E I L V E T  237  901 CTGAGAGGCCACCCCAGTGGGAAACACAACACTGTGTAGAGAGATCTCTT  1021 TATCCTTTTGTTGACCTGGCTGAGGGGCTTGAGGGACCACCCCTCTCCCAG  S T C K S D L A E L D H V V E I L V E T  237  961 GTTGTGACCCAGAGACAGATAAGCACTTGTCCTAAGAGGGGCTTTGTCACAGGATCTCAGTT  1021 TATCCTTTTTTTTAAGACTTTTTAAATTAAGTTTTTTTTT	361	CATCGCCAACACAGTCCGGCAGATCCAGGAGGAAATGAGCCAGGATGGTGTGTGGCATGG	420
## A P Q N V D R A P V E R L V S T E I L  97  ## 81 GTGTCGTACAGTGAGGGGGAGCTGAGGAAGGAGCCCCTCTCTGAGCTGAGAGATGCTCC C R T V R G A E E E H P A P E L E D A P 117  ## 17 CTTGCAAAACTCGGTTTCCGAGCTCCCCATCGTTGGCTCAGCACCAGGGCAAAGGAACCC L Q N S V S E L P I V G S A P G Q R N P 137  ## 17 CTTGCAAAACTCGGTTTCCGAGCTCCCCATCGTTGGCTCAGCACCAGGGCAAAGGAACCC L Q N S V S E L P I V G S A P G Q R N P 137  ## 17 CTTGCAAAACTCGGAGATGGACAGCCCCACAAGAAAACAGGGGGAAGGCTTTCAGAAGTC Q S S L W E M D S P Q E N R G S F Q R S 157  ## 17 CTTGGACCAGATATTTGAGACCCTGGAGAACAAAAACACGGGGAAGGAA		IANTVRQIQEEMSQDGVWHG	77
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C		MAPQNVDRAPVERLVSTEIL	97
C	481	GTGTCGTACAGTGAGGGAGCTGAGGAAGAGCACCCTGCTCCTGAACTGGAAGATGCTCC	540
541 CTTGCAAAACTCGGTTTCCGAGCTCCCATCGTTGGCTCAGCACCAGGGCAAAGGAACCC L Q N S V S E L P I V G S A P G Q R N P 137 601 TCAGAGCAGCCTCTGGGAGATGGACAGCCCACAAGAAAACAGGGGAAGCTTTCAGAAGTC Q S S L W E M D S P Q E N R G S F Q K S 157 661 ACTGGACCAGATATTTGAGACCCTGGAGAAACAAAAACTCCAGTTCAGTGGAGGAACTCTT L D Q I F E T L E N K N S S S V E E L F 177 721 CTCAGATGTGACAGCTCCTACTATGACCTGGACACAGTGCTACAGGGAACTGTG S D V D S S Y Y D L D T V L T G M M S G 197 781 GACCAAGTCCAGTCTCTGCAATGGCCTTGAGGGCTTTGCTGCAGCCACCCCTCCCCAG T K S S L C N G L E G F A A A T P P P S 217 841 TTCCACTTGCAAGTCTGGACTGGGAGGACCATGTGGTAGAGGACTCTGTGTGAGGCCACCCCTCCCCAG S T C K S D L A E L D H V V E I L V E T 237 901 CTGAGAGGCCACCCCAGTGGGCTAAGGGTGAGGGGACCACCCCTCTCTCCCAG S T C K S D L A E L D H V V E I L V E T 237 901 CTGAGAGGCCACCCCAGTGGGCTAAGGGTGAGGGGGCCACCCCTCTTGAGGCTCAC 1021 TATCCTTTTGTGTGACCTAGGGCTAAGGGTGAGGGGGGCCACCCCATGGAGCCAGCC			
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601 TCAGAGCAGCCTCTGGGAGATGGACAGCCCACAAGAAAACAGGGGAAGCTTTCAGAAGTC Q S S L W E M D S P Q E N R G S F Q K S 157 661 ACTGGACCAGATATTGAGACCCTGGAGAACAAAACTCCAGTTCAGTGGAGAGACTCTT L D Q I F E T L E N K N S S S V E E L F 177 721 CTCAGATGTGGACAGCTCCTACTATGACCTGGAGACAAAAACTCCAGTCAAGGGAATGATGAGGG S D V D S S Y Y D L D T V L T G M M S G 197 781 GACCAAGTCCAGTCCTGCAATGGCCTTGAGGGCTTTGCTGCAGCCCCCCCTCCTCCCAG T K S S L C N G L E G F A A A T P P P S 217 841 TTCCACTTGCAAGTCCTGGCTGAGCTGAGCACAGTGCTAACAGGAATGATCTGGTGAGAC S T C K S D L A E L D H V V E I L V E T 237 901 CTGAGAGGCCACCCCAGTGGCTAAGGGTGAGCCACCCCATCTCAGTGT 1021 TATCCTTTTGTGACACTAGGCTTGCTCCCAGGAGCCACCCCATGGAGCTCACGTGT 1022 TATCCTTTTGTGACACTAGGCTTGAGGGTGAGCCACCCCATGGAGCTCACGTGT 1031 TATCCTTTTTGTGACACTTGACCTTGGAGGGCTCACGTGTCTAGGTGAGACATTAGTTTTCAAATTAAGATTTTTAAACTTTTAAACTTTTTAAACTTTTTAAAATTATT		<b>.</b> • • • • • • • • • • • • • • • • • • •	
157   157	601		
661 ACTGGACCAGATATTTGAGACCCTGGAGAACAAAAACTCCAGTTCAGTGAGGAACTCTT  L D Q I F E T L E N K N S S S V E E L F  177  721 CTCAGATGTGGACAGCTCCTACTATGACCTGGACACAGTGCTAACAGGAATGATGAGTGG S D V D S S Y Y D L D T V L T G M M S G  197  781 GACCAAGTCCAGTCTTGCAATGGCCTTGAGGGCTTTGCTGCAGCCACCCCTCCCCAG T K S S L C N G L E G F A A A T P P P S  217  841 TTCCACTTGCAAGTCTGGACCTGGCTGAGCCAGTGCTAGAGAGATTCTTGGTGAGAC S T C K S D L A E L D H V V E I L V E T  960  1021 TATCCTTTTGTGTGACCTGGCTAAGGGGTAGAGGGCTCCCCATGGAGCCCACCCCTCCCAG 1021 TATCCTTTTGTTGACACTTGGACCTTGTCCTAAGAGGGGCTCTGGCTCTTGAGCTCAT 1040  1051 CTATTTTCAATTAGATAGGTGAACCTTGTCCTAAGAGGGGCTCTGGCTCTTGAGCTCAT 1051  1061 CTATTTTCAATTAGATAGGTGAACCTTTCTAAAATTAAGTTTTATATGTTTTTTGGCAATA 1141 TTTTGTCTTAAGATATATTTTTTAAACTTTTTAACTTTTAGATTTTTTTT			
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781 GACCAGTCCAGTCTTGCAATGGCCTTGAGGGCTTTGCTGCAGCCACCCCTCCTCCAG T K S S L C N G L E G F A A A T P P P S 217  841 TTCCACTTGCAAGTCTGACCTGGCTGAGCTGACCAGTGTGGTAGAGATTCTGGTGGAGAC S T C K S D L A E L D H V V E I L V E T 237  901 CTGAGAGGCCACCCCAGTGGGCTAAGGGTGAGGCCACCAGTCCCCATGGAGCTCACGTGT 960  ***  961 GTTGTGACCCAGAGACAGATAAGCACTTGTCCTAAGAGGGGGCTCTGGCTCTTGAGCTCAT 1020  1021 TATCCTTTTGTGTGACATTGGACTCACTGTGGAGGATGGTCTAGGTTAGT 1080  1081 CTATTTTCAATTAGATAGGTGAACTTTCTAAAATTAAGTTTTATATGTTTTTGGGCAATA 1140  1141 TTTTGTCTTAAGATATTTTTTTAAACTTTTTATACTTTAGATTTTTTCAGCTATTTTC 1200  1201 TTAAAAGTATATTTTTTTCACAAACATCCTCTGCTGCTACATTAGAAACATTTATAACCT 1260  1320 TCTACACTCCCAAGGCAACTGTAAATGTAGGCCGGCGGGTGTTTACATGAGAGGCTCCAG 1320  1321 TCTACACTCCCAAGGCAACTGTAAATGTAGCCGGCCGGGTGTTTACATGAGAGGCTCCAG 1440  1441 TGGGTCTACATTCTAGTAGAGCTTTGAAAAGAACATCCACTGCCCCCTCAC 1440  1441 TGGGTCTGCTCTGGCGGATCGGAGCTTCTTCTTCTTAGCCCAGGATTGCCCCCTCAC 1440  1441 TGGGTCTTCTCAGGAACTGTAAAATGTAGCCGGCCGGTGTTTACATGAGAGGCTTCAC 1560  1501 TATGCCTATTTATATGTAAAATGCACTTGAAAGGAACCATGCCCGAGCACCCCCC 1620  1620 ACCAGTTCTTCAGGGACTGTGAGAGCTCTCTTCCTAGCCCCTTGGCAAACCCCAC 1660  1651 ACCAGTTCTTCAGGGACTGCTGGAGCACTGCATGACACCCCA 1660  1662 ACCAGTTCTTCAGGGACTGCTGTGAGGCAAGGGACCACCCA 1660  1663 GCACCACATGCTCCATGCCAGGCCAGCACATGTGAGAACCACCCA 1660  1664 GCACCACATGCTCCATGCAAGGTTTTAAAAACAATCCGACCTCCATGCCCTTGCCTTGCCTTGCCTTGCCTTGCCTTGCCTTGCCTTGCCTTGCCTTGCCTTGCCTTGCCTTGCCTTGCTTGCTTGCCTTGCTTGCCTTGCCTTGCCTTGCCTTGCCTTGCTTGCCTTGCTTGCTTGCCTTTGCCTTTGCCTTTGCCTTTGCCTTTGCTTTGCTTTGCTTTGCTTTGCTTTGCTTTGCTTTGCTTTGCTTTGCTTTGCCTTTGCCTTTGCCTTTTTT	722	6 D 11 D 6 6 11 11 0 D 1 D 1 D 1 D 1 D 1 D 1 D 1 D 1	
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841 TTCCACTTGCAAGTCTGACCTGGCTGAGCTGACCATGTGGTAGAGATTCTGGTGGAGAC  S T C K S D L A E L D H V V E I L V E T  237  901 CTGAGAGGCCACCCCAGTGGGCTAAGGGTGAGGCCACCAGTCCCCATGGAGCTCACGTGT  960  961 GTTGTGACCCAGAGACAGATAAGCACTTGTCCTAAGAGGGGGCTCTGGCTCTTGAGCTCAT  1021 TATCCTTTTGTGTGACATTGGACTCACTGTGGAGGATGGTGTCACAGCTATGTCTAGT  1080  1081 CTATTTCAATTAGATAGGTGAACTTTCTAAAAATTAAGTTTTATATGTTTTTTGGCAATA  1141 TTTTGTCTTAAGATATTTTTTAAACTTTTTAACTTTTAGATTTTTTCAGCTATTTTC  1201 TTAAAAGTATATTTTTTCTACAAACATCCTCTGGTGCTACATTAGAAACATTTATATACCT  1261 AAATACGATTGGTGTGTCATTTTAAAGGTTTAAATAGAAACATTCTTTTGTTACTGAGTC  1321 TCTACACTCCCAAGGCAACTGTAAATGTAGCCGGCCGGGTGTTTACATGAGAGGCTCCAG  1381 TATGGTCTACATTCTAGTAGAGCTTGAAAAGAACCATGCACGACGCTCCACTGCCCCCTCAC  1440 TGGGTCTGCTCTGGCGGATCGGAGCTCTCTTCCTAGCCCCGTGTGCAGGATGGCTTTATT  1500  1501 TATGCCTATTTATATGTAAATGCCACTGAAAGCTAAGGTCTTACTCTGGAAATCCCAAC  1561 ACCAGTTCTTCAGGGACTGCTGTGAGAAGCTTAAGGTCTTACTCTTGGCCATC  1621 ACTGTCTGGTTCCCAGCCCAGCACATGTGACATGACACGCTCCCCCTCAC  1622 ACTGTCTGGTTCCCAGCCCAGCACATGTGACATGACACACCCA  1630 GCACCACATGCTCAAGTGTGACATGTGACACTGGCCCCATGCCCCTTGCCCC  1640  1641 AGAGAGGGTTGCAGTCCACTGTGAGAGCTAAGGACACCCCA  1652 ACTGTCTGGTTCCCAGCCCAGCACATGTGACACACCCCA  1660 GCACCACATGCTCCATGCTGTGCTGGGGGGGACCACCCCATGCTCCCCCTTGCCCC  1640  1651 GCACCACATGCTCCATGCTGTGTGCTGGGGGGGACCACCCCATGTCCTTGCCTTGCCCCCCTTGCCCCCCCC	701		
901 CTGAGAGGCCACCCAGTGGGCTAAGGGTGAGGCCACCAGTCCCCATGGAGCTCACGTGT 960 GTTGTGACCCAGAGACAGATAAGCACTTGTCCTAAGAGGGGGCTCACGTGT 961 GTTGTGACCCAGAGACAGATAAGCACTTGTCCTAAGAGGGGGCTCTGGCTCTTGAGCTCAT 1020 TATCCTTTTGTGTGACATTGGACTCACTGTGGAGGATGTGTGTCACAGGTATGTCTAGT 1080 CTATTTCAATTAGATAGGTGAACTTTCTAAAATTAAGTTTTATATGTTTTTTGGGCAATA 1140 TTTTGTCTTAAGATATTTTTTTAAACTTTTTATACTTTAGATTTTTTCAGCTATTTTC 1200 TTAAAAGTATATTTTTTCTACAAACATCCTCTGCTGCTACATTAGAAACATTTATAACCT 1261 AAATACGATTGGTGTCATTTTAAAGGTTTAAATGAAAACTTCTTTTGTTACTGAGTC 1320 TCTACACTCCCAAGGCAACTGTAAATGTAGCCGGCCGGGTGTTTACATGAGAGGCTCCAC 1321 TCTACACTCCCAAGGCAACTGTAAATGTAGCCCGGCCGGGTGTTTACATGAGAGGCTCCAC 1321 TCTACACTCCCAAGGCAACTGTAAATGTAGCCCGGCCGGGTGTTTACATGAGAGGCTCCAC 1321 TATGGTCTACATTCTAGTAGAGCTTGAAAAGAACCATGCACAGCTCCACTGCCCCCTCAC 1440 TGGGTCTGCTCTGGGGGATCGGAGCTCTCTCTCCTAGCCCCGTGTGCAGGATGGCTTTATT 1500 TATGCCTATTTATATGTAAATGCACTGAAAGCTAAGGTCTTACTCCTGGAAATCCCAAC 1561 ACCAGTTCTTCAGGGACTGCTGTGAGGCATGCCTTATGCAGGTCTTTTTTTT	0/1		
901 CTGAGAGGCCACCCCAGTGGGCTAAGGGTGAGGCCACCAGTCCCCATGGAGCTCACGTGT  961 GTTGTGACCCAGAGACAGATAAGCACTTGTCCTAAGAGGGGGCTCTGGCTCTTGAGCTCAT  1021 TATCCTTTTGTGTGACATTGGACTCACTGTGGAGGATGGTGTCACAGCTATGTCTAGT  1080 CTATTTTCAATTAGATAGGTGAACTTTCTAAAATTAAGTTTTATATGTTTTTTTGGGCAATA  1141 TTTTGTCTTAAGATATTTTTTTTAAACTTTTTATACTTTTAGAAACATTTTTTCAGCTATTTTC  1201 TTAAAAGTATATTTTTTTCTACAAACATCCTCTGCTGCTACATTAGAAACATTTATAAACCT  1261 AAATACGATTGGTGTGTCATTTTAAAGGTTTAAATAGAAAACATTCTTTTTGTTACTGAGTC  1321 TCTACACTCCCAAGGCAACTGTAAAATGTAGCCGGCCGGGTGTTTACATGAGAGGCTCCAC  1381 TATGGTCTACATTCTAGTAGAGCTTGAAAAGAACCATGCACAGCTCCACTGCCCCCTCAC  1441 TGGGTCTGCTCTGGCGGATCGGAGCTCTCTTCCTAGCCCCGTGTGCAGGATGGCTTTATT  1500  1501 TATGCCTATTTATATGTAAATGCACTGAAAGGTCTAAGGTCTTACTCTCTGGAAATCCCAAC  1561 ACCAGTTCTTCAGGGACTGCTGTGAAAGGTCTATGCACGGTCTTTGCCCACC  1621 ACTGTCTGGTTCCCAGCCCAGCACATGTGACATGACAGGTCTTTGTCCTTGGCCATC  1620  1621 ACTGTCTGGTTCCCAGCCCAGCACATGTGACATGACAGCTCCCATGCCCCAGCCCTCAC  1640  1561 GCACCACATGCTCCATGTCAAGTTGTACATGAGGACCATCCCAACCACCAC  1680  1680 GCACCACATGCTCCATGTCAAGTGTGTACAGTGAGACCACCCCAACCACCACCA  1741 AGAGAGGGTGCCATTTCAAGTTTTAAAGAACAATCCGACTCCCATATGATTTAGG  1861 GCTCCTCCACCCTGGGGTGGCCCTTATGCTGGGGGGGACCACTGGCTCCCATATGATTTAGG  1861 GCTCCTCCACCCTGGGGTGGCCCTTATGCTTGCTTGCTTG	041		
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1021 TATCCTTTTGTGTGACATTGGACTCACTGTGGAGGATGGTGTCACAGCTATGTCTAGT 1081 CTATTTTCAATTAGATAGGTGAACTTTCTAAAATTAAGTTTTATATGTTTTTTGGGCAATA 1140 1141 TTTTGTCTTAAGATATTTTTTTAAACTTTTTATACTTTAGATTTTTTCAGCTATTTTC 1201 TTAAAAGTATATTTTTTCTACAAACATCCTCTGCTGCTACATTAGAAACATTTATAACCT 1261 AAATACGATTGGTGTGCATTTTAAAGGTTTAAAATAGAAAACTTCTTTTGTTACTGAGTC 1321 TCTACACTCCCAAGGCAACTGTAAATGTAGCCGGCCGGGTGTTTACATGAGAGGCTCCAG 1381 TATGGTCTACATTCTAGTAGAGCTTGAAAAGAACCATGCACAGCCTCCACTGCCCCCTCAC 1441 TGGGTCTGCTCTGGCGGATCGGAGCTCTCTTCCTAGCCCCGTGTGCAGGATGGCTTTATT 1501 TATGCCTATTTATATGTAAATGCCACTGAAAGGTAAGGT	061		
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1201 TTAAAAGTATATTTTTCTACAAACATCCTCTGCTGCTACATTAGAAACATTTATAACCT 1261 AAATACGATTGGTGTCATTTTAAAGGTTTAAATAGAAAACTTCTTTTGTTACTGAGTC 1320 TCTACACTCCCAAGGCAACTGTAAATGTAGCCGGCCGGGTGTTTACATGAGAGGCTCCAC 1381 TATGGTCTACATTCTAGTAGAGCTTGAAAAGAACCATGCACAGCTCCACTGCCCCCTCAC 1441 TGGGTCTGCTCTGGCGGATCGGAGCTCTCTCTTCCTAGCCCCGTGTGCAGGATGGCTTTATT 1501 TATGCCTATTTATATGTAAATGCCACTGAAAGCTAAGGTCTTACTCCTGGAAATCCCAAC 1561 ACCAGTTCTTCAGGGACTGCTGTGAGGCAGTGCCTTATGCAGGTCTTGTCCTTGGCCATC 1620 ACTGTCTGGTTCCCAGCCCAGCACATGTGACATGAGACACACCCA 1681 GCACCACATGCTCCATGCTAAGTGTTACGTGGAGACCACCCA 1680 GCACCACATGCTCCATGCTAGTGTACGTGGAGACCACCCAC			
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1321 TCTACACTCCCAAGGCAACTGTAAATGTAGCCGGCCGGGTGTTTACATGAGAGGCTCCAG 1380 1381 TATGGTCTACATTCTAGTAGAGCTTGAAAAGAACCATGCACAGCTCCACTGCCCCCTCAC 1440 1441 TGGGTCTGCTCTGGCGGATCGGAGCTCTCTTCCTAGCCCCGTGTGCAGGATGGCTTTATT 1500 1501 TATGCCTATTTATATGTAAATGCCACTGAAAGCTAAGGTCTTACTCCTGGAAATCCCAAC 1561 ACCAGTTCTTCAGGGACTGCTGTGAGGCAGTGCCTTATGCAGGTCTTGTCCTTGGCCATC 1620 ACTGTCTGGTTCCCAGCCCAGCACATGTGACATGACATG			1260
1381 TATGGTCTACATTCTAGTAGAGCTTGAAAAGAACCATGCACAGCTCCACTGCCCCCTCAC 1440 1441 TGGGTCTGCTCTGGCGGATCGGAGCTCTCTTCCTAGCCCCGTGTGCAGGATGGCTTTATT 1500 1501 TATGCCTATTTATATGTAAATGCCACTGAAAGCTAAGGTCTTACTCCTGGAAATCCCAAC 1561 ACCAGTTCTTCAGGGACTGCTGTGAGGCAGTGCCTTATGCAGGTCTTTGTCCTTGGCCATC 1620 ACTGTCTGGTTCCCAGCCCAGCACATGTGACATGACATG			1320
1441 TGGGTCTGCTCTGGCGGATCGGAGCTCTCTTCCTAGCCCCGTGTGCAGGATGGCTTTATT 1500 1501 TATGCCTATTTATATGTAAATGCCACTGAAAGCTAAGGTCTTACTCCTGGAAATCCCAAC 1561 ACCAGTTCTTCAGGGACTGCTGTGAGGCAGTGCCTTATGCAGGTCTTGTCCTTGGCCATC 1620 ACTGTCTGGTTCCCAGCCCAGCACATGTGACATGACATG			1380
1501 TATGCCTATTTATATGTAAATGCCACTGAAAGCTAAGGTCTTACTCCTGGAAATCCCAAC 1560 1561 ACCAGTTCTTCAGGGACTGCTGTGAGGCAGTGCCTTATGCAGGTCTTGTCCTTGGCCATC 1620 ACTGTCTGGTTCCCAGCCCAGCACATGTGACATGAGGACATGCCCGAACCACCCCA 1681 GCACCACATGCTCCATGTCAAGTGTGACATGAGGACACTGGCTCCCAGGCCTGTGCTC 1741 AGAGAGGGTGTGCAGTCCTACGTGTGCTGGGGGGGACCACCGGACCTGTGCTTGCT			1440
1561 ACCAGTTCTTCAGGGACTGCTGTGAGGCAGTGCCTTATGCAGGTCTTGTCCTTGGCCATC 1620 1621 ACTGTCTGGTTCCCAGCCCAGCACATGTGACATGAGGACATGCCCGAACCACCCA 1680 1681 GCACCACATGCTCCATGTCAAGTGTGTACGTGGAGACCACCTGTGCTCCCAGGCCTGTGCTC 1741 AGAGAGGGTGTGCAGTCCTACGTGTGCTGGGGGGGACCACTGTGCTTGCT			1500
1621ACTGTCTGGTTCCCAGCCCAGCACATGTGACATGAGGACATGACGACACCCCA16801681GCACCACATGCTCCATGTCAAGTGTGTACGTGGAGACCACTGGCTCCCAGGCCTGTGCTC17401741AGAGAGGGTGTGCAGTCCTACGTGTGCTGGGGGGGACGACGGTGACCTGTGCTTGCT			1560
1681 GCACCACATGCTCCATGTCAAGTGTGTACGTGGAGACCACTGGCTCCCAGGCCTGTGCTC 1740 1741 AGAGAGGGTGTGCAGGTCCTACGTGTGCTGGGGGGGACGACGGTGACCTGTGCTTGCC 1800 1801 TTTTAAAATGGTGCTTGGACGTTTTAAGGTTAAAAACAATCCGACTCCATATGATTTAGG 1861 GCTCCTCCACCCTGGGGTGGCCCCTATGCTGTCTTGTATCTCCAAAGTCTTGGTACTC 1921 GGCACTGTCAGACTCCACCCCATGTATCCTTTTTGTTTCTCTTTGTGCTTTTTTTT			1620
1681 GCACCACATGCTCCATGTCAAGTGTGTACGTGGAGACCACTGGCTCCCAGGCCTGTGCTC 1740 1741 AGAGAGGGTGTGCAGTCCTACGTGTGCTGGGGGGGACGACGGTGACCTGTGCTTGCC 1800 1801 TTTTAAAATGGTGCTTGGACGTTTTAAGGTTAAAAACAATCCGACTCCATATGATTTAGG 1861 GCTCCTCCACCCTGGGGTGGCCCCTATGCTGTCTTGGATCTCCAAAGTCTTGGTACTC 1921 GGCACTGTCAGACTCCACCCCATGTATCCTTTTTGTTTCTCTTGTGCTTTTTTTT	1621	ACTGTCTGGTTCCCAGCCCAGCACATGTGACATGAGGACATGACATGCCCGAACCACCCA	1680
1741 AGAGAGGTGTGCAGTCCTACGTGTGCTGGGGGGGACGACGGTGACCTGTGCTTGCT	1681	GCACCACATGCTCCATGTCAAGTGTGTACGTGGAGACCACTGGCTCCCAGGCCTGTGCTC	
1801 TTTTAAAATGGTGCTTGGACGTTTTAAGGTTAAAAACAATCCGACTCCATATGATTTAGG 1860 1861 GCTCCTCCACCCTGGGGTGGCCCCTATGCTGTCTTGGATCTCAAAGTCTTGGTACTC 1920 1921 GGCACTGTCAGACTCCACCCCATGTATCCTTTTTGTTTCTCTTGTGCTTTTTTTGGACTT 1980 1981 CCCAACCTGAGCCTAAGGTTTTATTTTATATGTGCTTCAATATCAACAATGTAAACCTCA 2040			
1861 GCTCCTCCACCCTGGGGTGGCCCCTATGCTGTCTGGTTCTCAAAGTCTTGGTACTC 1921 GGCACTGTCAGACTCCACCCCATGTATCCTTTTTGTTCTCTTTTTTTT			
1921 GGCACTGTCAGACTCCACCCCATGTATCCTTTTTGTTTCTCTTGTGCTTTTTTTGGACTT 1980 1981 CCCAACCTGAGCCTAAGGTTTTATTTTATATGTGCTTCAATATCAACAATGTAAACCTCA 2040	1861	GCTCCTCCACCCTGGGGTGGCCCCTATGCTGTCTGGTTCTGGATCTCAAAGTCTTGGTACTC	
1981 CCCAACCTGAGCCTAAGGTTTTATTTTATATGTGCTTCAATATCAACAATGTAAACCTCA 2040	1921	GGCACTGTCAGACTCCACCCCATGTATCCTTTTTGTTTCTCTTGTGCTTTTTTTT	
2041 CTTTATTAAAAGTATCCAGCAAATGGAAAAAAAAAAAAA			
	2041	CTTT <b>ATTAA</b> AAGTATCCAGCAAATGGAAAAAAAAAAAAAAAA	



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# FIG. 1B

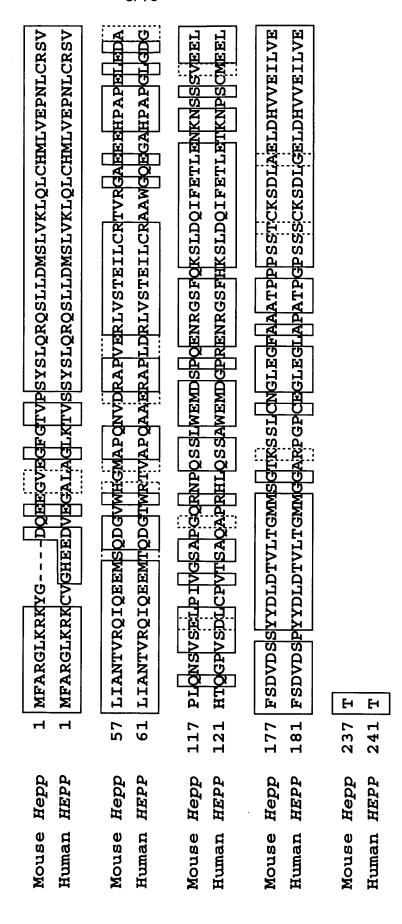
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61	L CGGGTCAGGACACAATGTTTGCACGAGGACTGAAGAGGAAATGTGTTGGCCACGAGGAAG	120
1		
121	L ACGTGGAGGGAGCCCTGGCCGGCTTGAAGACAGTGTCCTCATACAGCCTGCAGCGGCAGT	180
	V E G A L A G L K T V S S Y S L Q R Q S	36
181	CGCTCCTGGACATGTCTCTGGTGAAGTTGCAGCTTTGCCACATGCTTGTGGAGCCCAACC	240
	LLDMSLVKLQLCHMLVEPNL	
241	TGTGCCGCTCAGTCCTCATTGCCAACACGGTCCGGCAGATCCAAGAGGGAGATGACGCAGG	300
	CRSVLIANTVRQIQEEMTQD	
301	ATGGGACGTGGCGCACAGTGGCACCCCAGGCTGCAGAGCGGGCGCCGCTCGACCGCTTGG	360
	G T W R T V A P Q A A E R A P L D R L V	
361	TCTCCACGGAGATCCTGTGCCGTGCAGCGTGGGGGCAAGAGGGGGGCACATCCTGCTCCTG	420
	STEILCRAAWGQEGAHPAPG	
421	GCTTGGGGGACGGCCACACACAGGGTCCAGTTTCTGACCTTTGCCCAGTCACCTCAGCAC	
	LGDGHTQGPVSDLCPVTSAQ	
481	. AGGCACCAAGGCACCTGCAGAGCAGCGCCTGGGAGATGGATG	
	APRHLQSSAWEMDGPRENRG	
541	GAAGCTTTCACAAGTCACTTGATCAGATATTTGAAACGCTGGAGACTAAAAACCCCCAGCT	
	SFHKSLDQIFETLETKNPSC	
601	. GCATGGAAGAGCTGTTCTCAGACGTGGACAGCCCCTACTACGACCTGGACACAGTACTGA	660
	MEELFSDVDSPYYDLDTVL	
661	. CAGGCATGATGGGGGGTGCCAGGCCGGGCCCCTGCGAAGGGCTCGAGGGCTTGGCTCCGG	720
	G M M G G A R P G P C E G L E G L A P A	
721	. CCACCCCAGGCCCTAGCTCCAGCTGCAAGTCCGACCTGGGCGAGCTGGACCACGTGGTGG	
	TPGPSSSCKSDLGELDHVVE	
781	AGATCCTGGTGGAGACCTGAGCAGGAGCCCTGAGTGCTCACAGCCGCCTCTGACGCATTG	
	I L V R T *	241
841	ACACGTGAGCACTGGCTCCCACGGAGGGTGCGCCTGCCGCCAGCGGCCCAGCCTTGCTGC	
901	CCTGTCTGCTGATTCTGAGAAATCCCAGAACAGCCCATTACCAGTGGGGCTGCAGCCCTA	960
961	GGCCCGTCCCACTCACCTCCCCCTGTGGAGCGCCAGGCAGAGGCTGTTCTGGAAGGCTT	1020
1021	CTTGTCTTCTGACGTCCCCACAGCCCTGGGCCCCTCGTGTCTCTTTGTGTCCCCCACTGT	1080
1081	AGAGGACGGTGAGCCGCAGCTGCATCAACCTCCTTTTACCTTTAGATAGGTGAATTTTTA	1140
1141	CAATTCAGTTTTACATGTTTTGGGCAGTATTTTGTCTTAAGATATATTTTTTAAACTTTT	1200
1201	TATACCTTATCTCTTTAGATTTTTTCAGCTATTTTCTTAAAAGTATATTTTTTCTATAAA	1260
1261	CATCCTTTGCTGCTACATTAGAACTTTTATAGCCTAAACAATTGCAGTTGGTGTTTTCA	1320
1321	TTTTTTTAAGGTTTAAATAAGGGTTTTTTGTTTTGTTTTTGTTTTTT	1380
1381		1440
1441	TCTTCATTATGTCCTGCGCTGCAGTGAGACCTGGGTGAAAATCAGGAGCCGCACACAGCC	1500
1501	ACATCTTCCTAGACCTAAGAGTAAATTATGGAGGATTTTATTTTATGTCTATTTATATGTA	1560
1561	AATGTCATTGAAGACAAAGGTCAAATATTTGTCTGTTTGTAGATCACAGGCACCAGTTGG	1620
1621	TCTTCAGGGACCTCATAGCCCCTCGGTGGTGCCTTCTCAAGGCAGTGTTCCTGGAGGCTC	1680
1681	CCATCAGGGTCAGCCCATGCACCTGCCCTGGGTGAGGAAGTAGCATTGCTGCTGGATGAG	1740
1741	AAACGCCTGCGCTGCTCTGTTAGACTGGTGCTGAAACAAAAGGTTAAGGCTAGGTTGAAG	1800
1801	TCTAGAATGAAAGAAATCTGAATCCATGTCATTCATAACCCCTTGATCTGTAGTGTCATG	1860
1861	GGTGCTGCCGCAGGCAGGGAGTGAGCTGGGGGTGCCTGCAGCCTTCCACTCCTGCCCCGC	1920
1921	CTCACCCCACATGCTCCCTGTTTCTCATGCTTTCTCTAACTTCCTCACCCCTTAACCAAA	1980
1981	AAGGTGTGTTTTCTTTTGTGCATATAGCCATTCTTAAATATCAGTGATGTAAACCTCACT	2040
2041		

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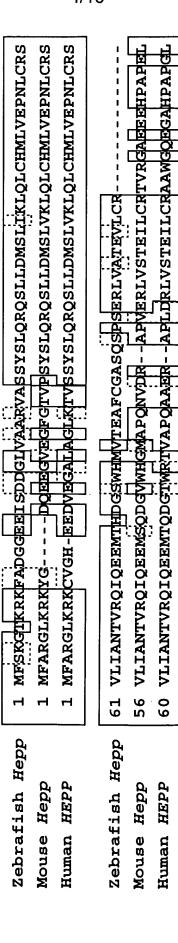
Inventor:. JURECIC et al.

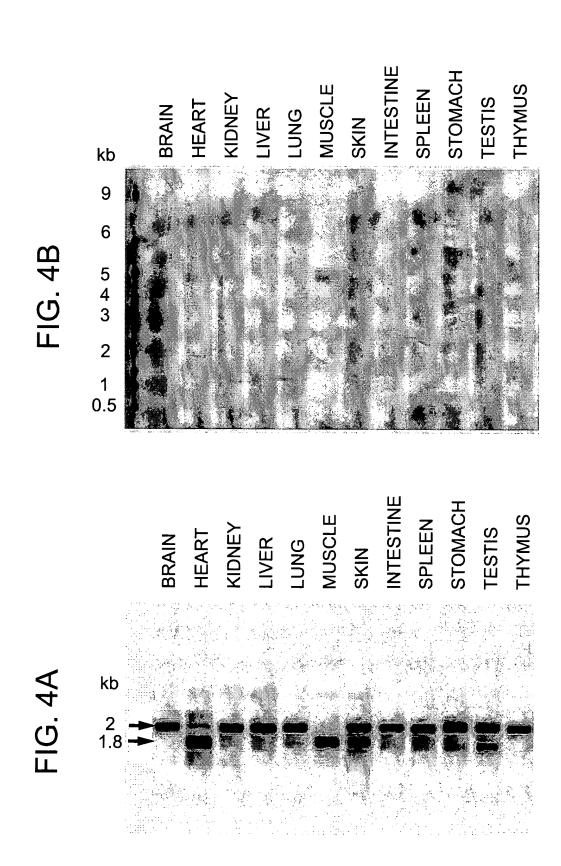
Title: "HEPP, A Novel Gene with a Role in Hematopoietic and Neural Development"

Docket No. 39532-176599



Title: "HEPP, A Novel Gene with a Role in Hematopoietic and Neural Development" Docket No. 39532-176599



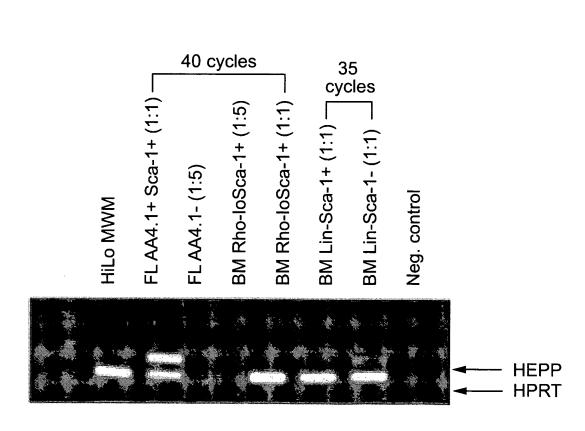


U.S. Patent Application No. 10/076,069 Inventor: JURECIC et al. Title: "HEPP, A Novel Gene with a Role in Hematopoietic and Neural Development"

Docket No. 39532-176599 5/16 U.S. Patent Application No. 10/076,069 Inventor: JURECIC et al. Title: "HEPP, A Novel Gene with a Role in

Hematopoietic and Neural Development"
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FIG. 5



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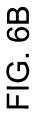
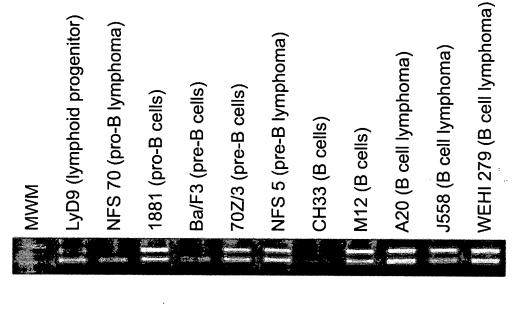


FIG. 6A



RAW309 (monocyte-macrophage)

Neg. control

J774 (monocyte-macrophage)

FDC-P1 (myeloid progenitor)

WEHI 7.1 (T cell lymphoma)

Thymus

MWM

EL4 (T cell lymphoma)

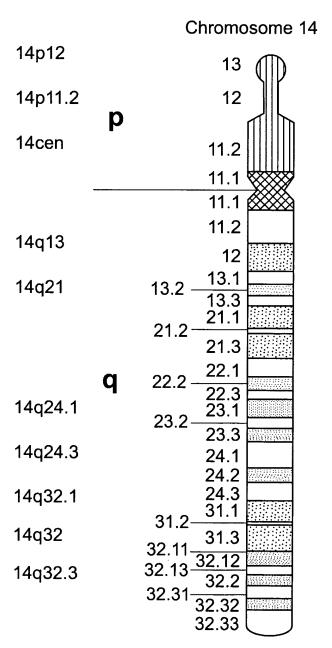
Spleen

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FIG. 7

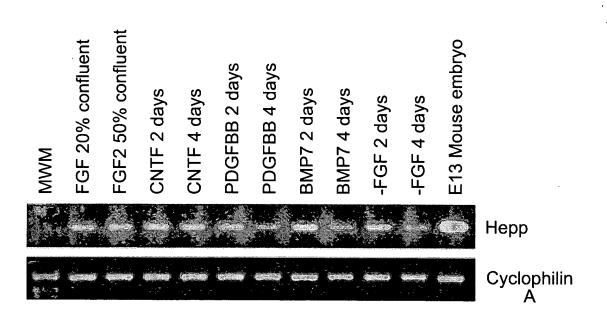


translocation breakpoints

U.S. Patent Application No. 10/076,069 Inventor: JURECIC et al. Title: "HEPP, A Novel Gene with a Role in Hematopoietic and Neural Development" Docket No. 39532-176599

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# FIG. 8

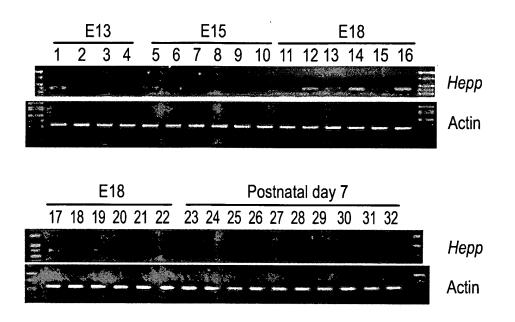


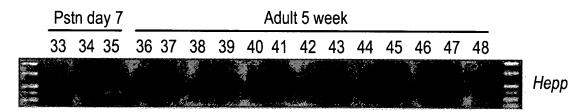
Title: "HEPP, A Novel Gene with a Role in Hematopoietic and Neural Development"

Docket No. 39532-176599

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### FIG. 9





#### Embryo day 13

- 1. Teleocephalon/Diencephalon
- 2. Mescocephalon (Midbrain)
- 3. Rhombeocephalon (Hindbrain)
- 4. Spinal cord

#### Embryo day 15

- 5. Teleocephalon
- 6. Diencephalon
- 7. Midbrain
- 8. Pons
- 9. Medulla
- 10. Spinal cord

#### Embryo day 18

- 11. Frontal cortex
- 12. Posterior cortex
- 13. Entorhinal cortex
- 14. Olfactory bulb
- 45 LU
- 15. Hippocampus
- 16. Striatum
- 17. Thalamus
- 18. Hypothalamus
- 19. Midbrain
- 20. Pons
- 21. Medulla
- 22. Spinal cord

#### Postnatal day 7

- 23. Frontal cortex
  - 24. Posterior cortex
  - 25. Tosterior cortex
  - 25. Entorchinal cortex
  - 26. Olfactory bulb
  - 27. Hippocampus
  - 28. Striatum
  - 29. Thalamus
  - 30. Hypothalamus
  - 31. Cerebellum
  - 32. Midbrain
  - 33. Pons
  - 34. Medulla
  - 35. Spinal cord

#### Adult 5 week

- 36. Frontal cortex
- 37. Posterior cortex
- 38. Entorhinal cortex
- 39. Olfactory bulb
- 40. Hippocampus
- 41. Striatum
- 42. Thalamus
- 43. Hypothalamus
- 44. Cerebellum
- 45. Midbrain
- 46. Pons
- 47. Medulla
- 48. Spinal cord

U.S. Patent Application No. 10/076,069 Inventor: JURECIC et al. Title: "HEPP, A Novel Gene with a Role in

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### FIG. 10A

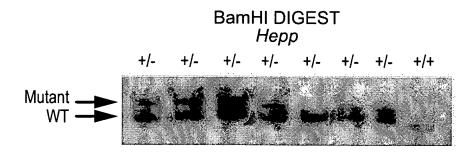
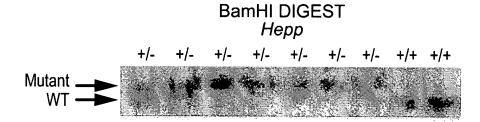
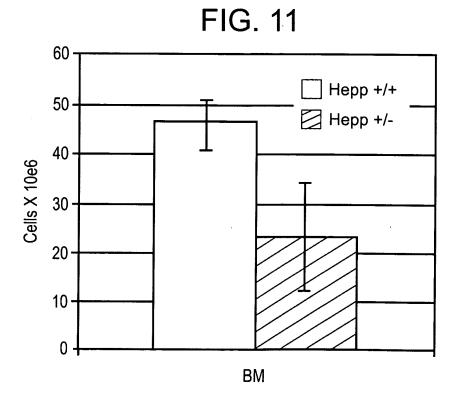


FIG. 10B





U.S. Patent Application No. 10/076,069 Inventor: JURECIC et al. Title: "HEPP, A Novel Gene with a Role in Hematopoietic and Neural Development"

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FIG. 12

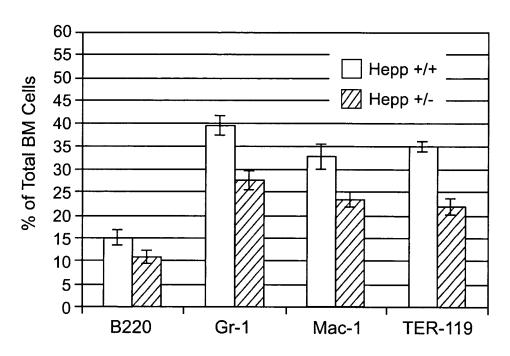
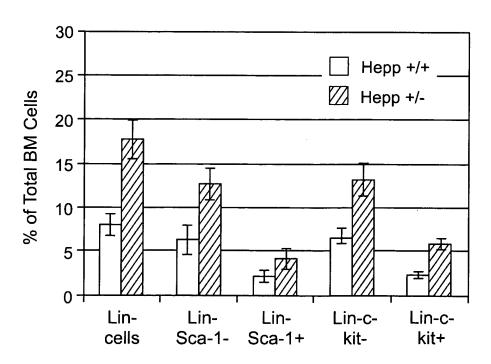


FIG. 13



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FIG. 14

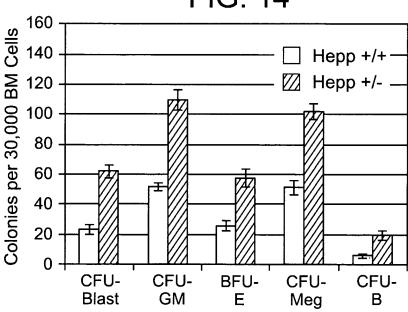


FIG. 15A

Hepp +/+

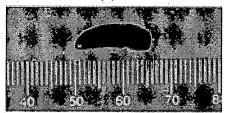


FIG. 15B

Hepp +/-

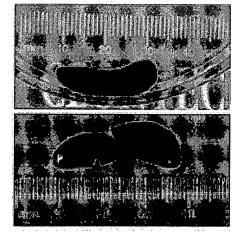
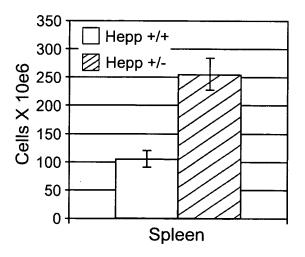


FIG. 15C

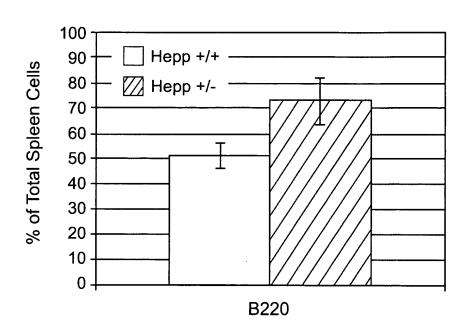


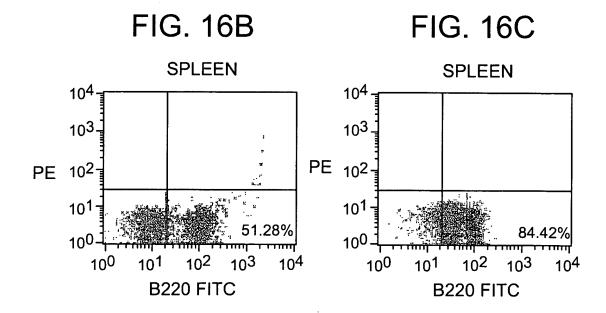
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FIG. 16A





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FIG. 17A

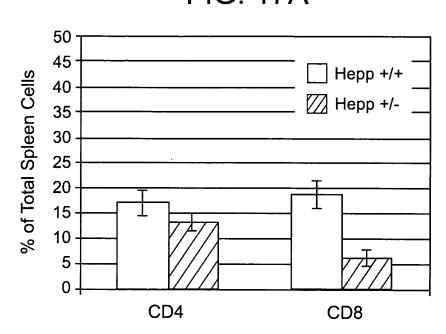


FIG. 17B FIG. 17C **SPLEEN SPLEEN** 104 104 103 103. CD8 PE <sup>102</sup> CD8 PE <sup>102</sup> 101 101 16.9% 13.1% 100 100 102 103 10<sup>0</sup> 104 100 102 103 101 101 104 CD4 FITC CD4 FITC

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FIG. 18A

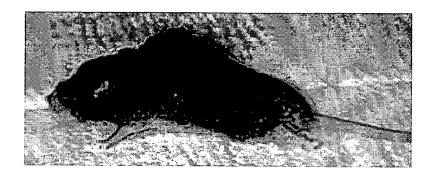


FIG. 18B

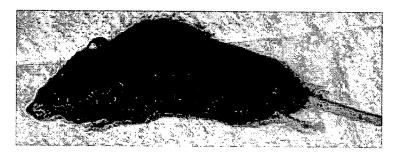


FIG. 18C

